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Docket No. 843.43729X00

Serial No. 10/811,973

Office Action dated August 11, 2006

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior listings, and all prior versions, of claims in the application.

LISTING OF CLAIMS:

1. (Currently Amended) A semiconductor device comprising:
first and second electrodes having layers containing copper as main components;
a semiconductor element arranged between said first and second electrodes and electrically connected to said first and second electrodes; and
a glass sealing member which seals said first electrode, said semiconductor element, and said second electrode,
wherein, in the first and second electrodes, ratios of the layers containing copper as main components are more than 20 wt% and equal to or less than 25 wt%,
said first and second electrodes have copper oxide layers formed on the outer peripheries of said layers containing copper as main components, the copper oxide layers contacting with said glass sealing member, and
the thickness of said copper oxide layers is 1.5 μm or less at the time before said first and second electrodes are glass-sealed.
2. (Original) The semiconductor device according to claim 1,
wherein said first and second electrodes are constituted by Dumet wires.
3. (Original) The semiconductor device according to claim 1,
wherein said semiconductor element is a diode.
4. (Original) The semiconductor device according to claim 1,
wherein said semiconductor element is a Schottky barrier diode.

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5. (Previously Presented) The semiconductor device according to claim 1,
wherein the semiconductor element has a metal electrode, and
wherein a sealing temperature of said glass sealing member is 630°C or less
and is a temperature at which silicification of said metal electrode of the
semiconductor element is not enhanced.
6. (Original) The semiconductor device according to claim 1,
wherein a glass softening point of said glass sealing member is 560°C or less.
7. (Canceled)
8. (Canceled)
9. (Previously Presented) The semiconductor device according to claim 12,
wherein the semiconductor element has a bump electrode, and
wherein the thickness of said layers containing copper as main components
formed around said core portions are larger than the height of said bump electrode.
10. (Cancelled).
11. (Original) The semiconductor device according to claim 1,
wherein, in said first and second electrodes, ratios of said layers containing
copper as main components fall within the range of 21 to 24 wt%.
12. (Previously Presented) The semiconductor device according to claim 1,
wherein said first and second electrodes have core portions and said layers
containing copper as main components, said layers being formed on the outer
peripheries of said core portions.

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13. (Original) The semiconductor device according to claim 12,
wherein said core portions of said first and second electrodes comprise a
nickel-containing alloy.
14. (Original) The semiconductor device according to claim 12,
wherein said core portions of said first and second electrodes are comprised
of a nickel-containing alloy having a nickel content of 45 wt% or less.
15. (Original) The semiconductor device according to claim 12,
wherein said core portions of said first and second electrodes are comprised
of a nickel-containing alloy having a nickel content falling within the range of 41 to 43
wt%.
16. (Original) The semiconductor device according to claim 12,
wherein said core portions of said first and second electrodes are comprised
of an alloy containing iron and nickel as main components.
- 17-18. (Cancelled).
19. (Original) The semiconductor device according to claim 1,
wherein said semiconductor element comprises by a Schottky barrier diode
having:
a semiconductor substrate;
an epitaxial layer formed on the semiconductor substrate; and
a metal electrode formed on the epitaxial layer.
20. (Original) The semiconductor device according to claim 19,
wherein said metal electrode has a tungsten film.

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21. (Previously Presented) The semiconductor device according to claim 1,
wherein the semiconductor element has a metal electrode, and
wherein a sealing temperature of said glass sealing member is 620°C or less
and is a temperature at which silicification of said metal electrode of the
semiconductor element is not enhanced.